

**ABSTRACT OF THE DISCLOSURE**

This invention provides a process for producing a radioactive arsenic-containing compound, comprising the steps of: (i) subjecting an arsenic-containing compound to a neutron irradiation treatment, said arsenic-containing compound being selected from a group consisting of  $\text{As}_2\text{O}_3$ ,  $\text{As}_2\text{S}_3$ ,  $\text{As}_2\text{S}_2$ , and a combination thereof, such that the arsenic element contained in the arsenic-containing compound is converted to a radioactive arsenic isotope; and (ii) recovering the resultant product from step (i).

This invention also provides a pharmaceutical composition comprising a therapeutically effective amount of the radioactive arsenic-containing compound and a pharmaceutically acceptable carrier. The pharmaceutical composition can be used in the treatment of tumors/cancers such as hematological malignancies and solid tumors.